The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS. 3. DATES COVERED (From - To) 1. REPORT DATE (DD-MM-YYYY) 2. REPORT TYPE 06/15/2013 FINAL January 2011 - June 2013 4. TITLE AND SUBTITLE 5a. CONTRACT NUMBER Final Technical Report INIT-84 Development of Prototype Reactive Armor W15QKN-09-9-100 (2009-371-5) Tile **5b. GRANT NUMBER** NA 5c. PROGRAM ELEMENT NUMBER 6. AUTHOR(S) 5d. PROJECT NUMBER Diana-Lynn Herbst; Leonard J. Mecca NA 5e. TASK NUMBER NA 5f. WORK UNIT NUMBER NA 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) 8. PERFORMING ORGANIZATION **REPORT NUMBER CLogic Defense** 26 Sky View Drive INIT-84 Avon, CT 06001 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) 10. SPONSOR/MONITOR'S ACRONYM(S) Josiah Fay DOTC RDECOM/ARDEC Building 65 11. SPONSOR/MONITOR'S REPORT NUMBER(S) Picatinny Arsenal, NJ 07806 NA 12. DISTRIBUTION/AVAILABILITY STATEMENT DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited. 13. SUPPLEMENTARY NOTES 14. ABSTRACT Produced prototype Reactive, Active, and Passive Armor Products using precision green manufacturing technologies to enhance the operational effectiveness and reduce the cost and weight of the vehicle add-on armor package. 15. SUBJECT TERMS Armor 17. LIMITATION OF 18. NUMBER 19a. NAME OF RESPONSIBLE PERSON 16. SECURITY CLASSIFICATION OF: **ABSTRACT** a. REPORT c. THIS PAGE b. ABSTRACT Diana-Lynn Herbst **PAGES** 19b. TELEPHONE NUMBER (Include area code)

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REPORT DOCUMENTATION PAGE

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Final Technical Status Report DOTC 10-01-INIT-084 "Development of Prototype Reactive Armor Tile"

Reporting Period: through 15 June 2013

CLogic LLC

Diana-Lynn Herbst Leonard J. Mecca CLogic, LLC 26 Sky View Drive Avon, CT 06001 Office: 860-324-2227

Submitted: 15 June 2013



1. Comments on Technical/Cost/Schedule Performance

Technical: All milestones were completed.

2. Initiative Quad Chart

Development of Prototype Reactive Armor Tile				
Goals & Objectives	Initiative Information			
Produce prototype Reactive, Active, and Passive Armor Products using precision green manufacturing technologies to enhance the operational effectiveness and reduce the cost and weight of the vehicle add-on armor package.	Initiative Lead: CLogic LLC Period of Performance: 24 months Funding: \$1,884,912.00			
Milestones & Technical Achievements	Implementation & Payoff			
Work on this initiative has been fully completed	Schedule: June 15, 2013 Status: 100% complete Technology will provide prototype lightweight reactive armor systems using hybrid armor materials for vehicles that resist increasingly lethal threats, including simultaneous attacks from different weapons. Technologies include lightweight composites, ceramics, metal-ceramic compounds, nanomaterials, and more advanced reactive and active protection systems.			
<u>Current Status:</u> Technical = Green Schedule = Green Cos	tt = <mark>Green</mark>			

3. Supplemental Information

In order to improve the usefulness of the quad charts and provide DOTC with sufficient initiative information, the Quarterly Report must be supplemented with data described below.



3.1 Technical Achievements

Prototype hardware was produced and provided to the Government for testing.

Milestone Status:

Mileston e No.			Percent complet
	Deliverable Description	Due Date	e
1	Quarterly Technical and Business Status Reports	3/20/2011	100%
2	Fabricate Prototype Wave Shapers	4/15/2011	100%
3	Identify candidate materials	4/15/2011	100%
4	Prepare armor tiles Prototype 1	5/30/2011	100%
5	Quarterly Technical and Business Status Reports	6/20/2011	100%
6	Prepare armor tiles Prototype 2	7/30/2011	100%
7	Design and prototype multi-functional armor in various sizes and shapes 1	7/30/2011	100%
8	Analysis, modeling, and simulation 1	7/30/2011	100%
9	Pro-E and 3D C and Models of prototype designs 1	8/30/2011	100%
10	Quarterly Technical and Business Status Reports	9/20/2011	100%
11	Prepare armor tiles Prototype 3	9/30/2011	100%
12	Design and prototype multi-functional armor in various sizes and shapes 2	9/30/2011	100%
13	Fabricate prototypes and armor mock-ups 1	9/30/2011	100%
14	Pro-E and 3D C and Models of prototype designs 2	10/30/2011	100%
15	Analysis, modeling, and simulation 2	10/30/2011	100%
16	Prepare armor tiles Prototype 4	11/30/2011	100%
17	Fabricate prototype multifunctional, lightweight layered material tiles that perform two or more primary functions 1	11/30/2011	100%
18	Quarterly Technical and Business Status Reports	12/20/2011	100%
19	Pro-E and 3D C and Models of prototype designs 3	12/20/2011	100%
20	Design and prototype multi-functional armor in various sizes and shapes 3	12/30/2011	100%
21	Design and prototype multi-functional armor in various sizes and shapes 14	1/30/2012	100%
22	Fabricate prototypes and armor mock-ups 2	1/30/2012	100%



23	Prepare armor tiles Prototype 5	2/28/2012	100%
	Annual Technical and Quarterly Business Status		100%
24	Reports	3/20/2012	1000/
25	Design and prototype multi-functional armor in various sizes and shapes 4	3/30/2012	100%
•	Fabricate prototype multifunctional, lightweight layered material tiles that perform two or more primary	0/20/2012	100%
26	functions 2	3/30/2012	100%
27	Pro-E and 3D C and Models of prototype designs 4	4/30/2012	100%
28	Prepare armor tiles Prototype 6	4/30/2012	100%
29	Design and prototype multi-functional armor in various sizes and shapes 5	4/30/2012	
30	Design and prototype multi-functional armor in various sizes and shapes 6	5/30/2012	100%
31	Pro-E and 3D C and Models of prototype designs 5	5/30/2012	100%
32	Quarterly Technical and Business Status Reports	6/20/2012	100%
33	Pro-E and 3D C and Models of prototype designs 6	6/30/2012	100%
34	Design and prototype multi-functional armor in various sizes and shapes 7	6/30/2012	100%
35	Prepare armor tiles Prototype 7	6/30/2012	100%
36	Pro-E and 3D C and Models of prototype designs 7	7/30/2012	100%
37	Design and prototype multi-functional armor in various sizes and shapes 8	7/30/2012	100%
38	Analysis, modeling, and simulation 3	7/30/2012	100%
39	Design and prototype multi-functional armor in various sizes and shapes 9	8/30/2012	100%
40	Quarterly Technical and Business Status Reports	9/20/2012	100%
41	Pro-E and 3D C and Models of prototype designs 8	9/30/2012	100%
42	Prepare armor tiles Prototype 8	9/30/2012	100%
43	Design and prototype multi-functional armor in various sizes and shapes 10	9/30/2012	100%
44	Analysis, modeling, and simulation 4	9/30/2012	100%
45	Fabricate prototypes and armor mock-ups 3	9/30/2012	100%
46	Design and prototype multi-functional armor in various sizes and shapes 11	10/30/2012	100%
47	Analysis, modeling, and simulation 5	10/30/2012	100%
48	Prepare armor tiles Prototype 9	11/30/2012	100%
49	Design and prototype multi-functional armor in various sizes and shapes 12	11/30/2012	100%
50	Quarterly Technical and Business Status Reports	12/20/2012	100%
51	Design and prototype multi-functional armor in various sizes and shapes 13	12/30/2012	100%



52	Pro-E and 3D C and Models of prototype designs 10	1/30/2013	100%
53	Design and prototype multi-functional armor in various sizes and shapes 15	2/28/2013	100%
54	Pro-E and 3D C and Models of prototype designs 9	3/15/2013	100%
55	Prepare armor tiles Prototype 10	3/15/2013	100%
56	Design and prototype multi-functional armor in various sizes and shapes 16	3/15/2013	100%
57	Characterize the properties	3/15/2013	100%
58	Fabricate prototype multifunctional, lightweight layered material tiles that perform two or more primary functions 3	3/15/2013	100%
59	Analysis, modeling, and simulation 6	3/15/2013	100%
60	Fabricate prototypes and armor mock-ups 4	3/15/2013	100%
61	Producibility Study	3/15/2013	100%
62	Prototype Design Assessment	3/15/2013	100%
63	Critical characteristics identification	3/15/2013	100%
64	Fabricate prototype packaging	3/15/2013	100%
65	POP testing	3/15/2013	100%
66	Manufacturability Report	3/15/2013	100%
67	Technology Transfer Plan	3/15/2013	100%
68	Final Technical and Business Status Reports	3/15/2013	100%

Technical Readiness Level Status: 5

3.2 Problems Encountered and Action Taken

• None

3.3 Technology Transfer

• None

3.4 Plans for Next Quarter: Initiatives is complete

